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Title of the Invention

INFORMATION DISCLOSURE AND CONTRACTING METHOD
FOR THE DEMANDER OF DISTRIBUTED POWER
SUPPLY BUSINESS

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INFORMATION DISCLOSURE AND CONTRACTING METHOD FOR THE
DEMANDER OF DISTRIBUTED POWER SUPPLY BUSINESS

BACKGROUND OF THE INVENTION

Field of the Invention

The present invention relates to an
information disclosure and contracting method for the
5 demander (including a consumer) of distributed power
supply business, and in particular, to an information
disclosure and contracting method, for use in a case in
which a company or an enterprise to supply power to
power demander using distributed power supply carries
10 out the business using power transmission lines and/or
power distribution lines of existing power companies,
the method being used to supply charging information
when the company makes services for power demanders,
the method being used for a new contract and for update
15 of an existing contract.

Description of the Related Art

Recently, in one aspect of a method of
disclosing information to load demanders of power
transmission and distribution systems in Japan, it has
20 been commonly known that charging information is
controlled to suit convenience of the power supplying
side. That is, an electric power company of each
region in Japan employs a method to basically close
information only within the power transmission network

subsequent highest input facilities, and 90% for other facilities"

(2) Of the total value obtained according to (1), 100% for first 6 kilowatt (kW), 90% for next 14 kW, 80% for next 30 kW, and 70% for those exceeding 50 kW.

That is, the contracted electric power is represented by a value obtained by multiplying the coefficients of (2) by the total value obtained by multiplying the coefficients of (1). Moreover, the power rate is determined according to two categories, i.e., Summer and other seasons. These are not determined by assuming the small-sized power generating unitary capacity as compared with the size of the ordinary power company using distributed power supply. In consequence, the method can be regarded as inevitable on the operating side of the social system which is totally responsible for electric power generation, transmission, and distribution.

SUMMARY OF THE INVENTION

However, an object to be discussed is as follows. In the age in which the established electric power utility operating system which was also a national policy must be changed in consideration of the world trends of environmental problems and saving of resources as well as in the worldwide framework called "globalization", it is necessary to cope with the change. In other words, the object resides also in

that how the operating system regarding electric power matches with waves of increasing functionality of electronic apparatuses represented by personal computers and the developing information society existing in the background. Particularly, since there appears a situation in which introduction of the distributed power supply is positively enhanced to be incorporated in the existing electrified society, the object resides in that how rationally a concrete countermeasure is to be provided by harmonizing the countermeasure with economic principles. That is, a system construction plan must be proposed in consideration of up to advantages of demanders as end users.

15 Additionally, the basic idea of the trend also matches the principle of the Kyoto Conference (Third Conference of Parties to the United Nations Convention on Climate Change) for worldwide environmental protection. That is, the trend of
20 uninterrupted growth of power consumption has been used as assumption to produce a power resource facility plan of the subsequent year. The basic idea above also indirectly matches with the restriction of carbon oxide emission as a countermeasure for prevention of global
25 warming which attracted attentions as the atmospheric environmental problem as well as with the saving of resources of the earth.

 Description will now be given of solutions

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for the problems regarding the difficulties described above. Heretofore, the large-sized power generating facilities of the existing electric power companies are dominant and power transmission loss does not attract
5 any particularly attention. Such an age of uninterrupted-expanding stable operation conducted by assuming the demand in the economic environment which basically, uninterruptedly increases in quantity has been changed into a new age. In the change of
10 situation, the demand is saturated and construction of new power facilities is restricted in consideration of the saving of resources. Advent of the age in which by introducing distributed power supply, the distance between the power generating location and the power
15 consuming location is remarkably minimized makes it necessary to develop a system adaptable for the trend of application of information apparatuses which can appropriately reflect the rational judgement and intentions of demanders. That is, a new system is
20 required to be developed. The system must provide usability such that when an human operator uses an electronic information processing apparatus of low power consumption, the operator feels easiness, not inconvenience and/or the operator feels that he or she
25 can obtain results greater than his or her effort conducted for the results; even if the operator is not versed in the handling of the information processing apparatus, contents to be naturally obtained can be

The object of the present invention, which has been devised to remove the problems above, is to provide a rational information disclosure and

To achieve the object above according to the present invention, there is provided an information

disclosure and contracting method for a demander of a power company or enterprise of distributed power supply business in which the enterprise operates a business by selling electric power to each power load demander via power transmission and distribution lines of existing power companies and dedicated lines dedicated to the business, comprising the steps of connecting an information apparatus of said demander via a communication line to an information apparatus of said company of distributed power supply business, presenting by said enterprise, when a power supply contract is signed between said enterprise and said demander, information of contract (start) periods and information of a unit price of charge for each said

contract period, setting by said demander a customized pattern (load pattern) for each desired one of said periods according to the information and sending the pattern to said enterprise, presenting information of charge for said load pattern from said enterprise to said demander, and determining by said demander a power supply contract for said periods.

In accordance with the present invention, the information disclosure and contracting method further comprising the steps of collating by said demander said load pattern to be set at a present time with a load pattern in a predetermined period in the past, re-setting values of said load pattern at the present time, and sends said load pattern to said enterprise, and presenting, from said enterprise to said demander, information of charge for said load pattern modified and set by said demander.

In accordance with the present invention, the information disclosure and contracting method further comprising the steps of setting by said demander, for said load pattern to be set at a present time, a modified pattern for time zones or periods in which a large difference exists for a unit price of charge and sending the modified pattern to said enterprise, presenting, from said enterprise to said demander, information of charge for the pattern modified and set by said demander and supplying, from said enterprise to said demander, information of difference of charge with

Next, before explaining an embodiment of the present invention, description will be given of a background and a basic concept of the present invention.

In the background of the present invention, the economic principle is applied when a charge contract is signed between an electric power supplier using distributed power generation and a demander of electric power. First, a primary assumption will be described. When making an electric power sales contract with the demander, the electric company of distributed power supply emphasizes an economic advantage by comparing various contracts between the existing electric power companies and demanders. However, this is not limited only to the reasonable, fixed unit price. Assuming that the unit price varies depending on the relationship between supply and demand, the company strongly explains the demander that the contract is resultantly quite advantageous when compared with those of the existing electric power companies. There exists a recent example in which an existing electric power company developed a contract system of reduced charge for midnight electric power and provided the system to demanders as end users. To cope with such a system, the electric power company or enterprise of distributed power supply (to be simply

5 contract with the demander side according to a
correlation between the known charging system with the
own power supply cost. When determining a strategy,
tactics, and/or a plan for the business, the enterprise
sets a charging system by paying attention to a break-
10 even point related to a load rate (facility operating
rate). In setting the charge system, there are
employed two components including a fixed component and
a variable component changing according to the economic
principle. This also includes a case in which the
15 charge system depends entirely on the variable
component. It may be expected that the business profit
is obtained from the fixed and variable components or
from either one thereof, for example, the variable
component.

20 The basic concept of the present invention is
as follows. For convenience of explanation,
description will be given of an example of a contract
with a demander on assumption that the fixed income
from big demanders for 50% of the output is canceled
25 with the cost and the income from small demanders
corresponding to the remaining 50% of the output is the
profit. The contract is signed for a situation when
the enterprise satisfies the variable demand of the

small demander with the 50% of the output.

If the small demander is a member of a general family or the like, it is natural that the member is not an expert of the information machines and equipment, information items supplied from the machine side are display contents like those supplied from an automated-teller machine (ATM) including information items of the operation procedure guidance. The contents displayed on the information apparatus are to be specifically determined according to the contract with the enterprise, and there arises an economic advantage as a result. That is, the apparatus displays that the charged amount is smaller than that resultant from the charge system of the existing electric power company and the different value between the charged amounts. Thereafter, several cases are examined for the demander to check advantages and the like. All items in a range in which the demander can check the advantages are confirmed, and the items desired by the demander are presented for the contract. By receiving a contract confirmation from the supplier side, the contract operation is terminated.

A more specific case will be described.

Assume that a person A working in a firm jobs in a local place and is living in a rented house, leaving his family members. The person A weekends with the family members, that is, he lives in the rented house only weekdays. Therefore, the electric power

FOR "CHOICE"

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For the power load consumption pattern once
20 determined as described above, there may be a case in
which a long-period business trip takes place (the
person A is absent from the rented house) immediately
before the pertinent contract month and hence it is
beforehand understood that the pattern is considerably
25 lower than the expected pattern. In such a case,
assuming that the point of time is about the end of
May, it is possible that the calculation and the
contract are carried out again according to a charge

As above, that the power demander can set a rational mode of power consumption according to own decision of the demander to suppress the expenditure as well as the financial advantage are important also as a factor to live an independent social life. On the other hand, if results obtained by collecting many different patterns of power consumption modes of respective power demanders are within the total load pattern assumed by the company B, the company B can also acquire, as electronic information, data to discuss the profit calculation thereof and service providing tactics for demanders as customers. Moreover, the data can be used without any long delay

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is diagram showing an example of a configuration of an existing electric power company and general power demanders when an electric power company of distributed power supply is introduced according to the present invention;

Fig. 3 is a diagram showing a flow to set
20 data and a flow to create reference actual resultant
values according to the present invention;

Fig. 5A, Fig. 5B are a diagram to explain a dedicated tool according to the present invention;

Fig. 6 is a diagram to explain a time limit to set a determined (fixed) load pattern according to the present invention;

Fig. 7 is a diagram showing a load pattern
5 associated with spot supply according to the present
invention;

Fig. 8 is a diagram showing a load pattern of a combination of determined supply and spot supply according to the present invention;

10 Fig. 9 is diagram showing a pattern in which
an individual contract is not required according to the
present invention;

Fig. 10 is a diagram showing return of a contract from a user (demander) to the enterprise and a summary of information returned according to the present invention;

Fig. 11 is a diagram to explain a charge settlement method according to the present invention;

Fig. 12 is a diagram showing patterns of
20 loads accumulated on the enterprise side according to
the present invention;

Fig. 13 is a diagram to explain the setting of spot prices according to the present invention;

Fig. 14 is a diagram to explain the setting
25 of changing spot prices according to the present
invention; and

Fig. 15 is a diagram to explain the acquisition of actual result data of power consumed by

DESCRIPTION OF THE EMBODIMENTS

5 invention.

invention. The configuration example includes an electric power company in a predetermined region, an electric power company of distributed power supply (to be abbreviated simply as "enterprise"), an owner of a building, tenants as shops or the like, and tenants as persons who rents rooms thereof, a hospital, and residents or persons 1 and 2 living in an a zone (to be referred to as "village") in which a plurality of families live such as a housing complex in a region.

20 routes in which, for example, the enterprise transmits electric power to a power transmission line 1 of the power company, the power company sends power via the power transmission line 1 to a distribution line 1 of each power demander. The enterprise may use a
25 dedicated line as a route to transmit power to each power demander. In this description, a certain amount of power consumption is assumed, and the volume of

consumption is not at a consumption level of a general family. That is, the assumed consumption level is at least several times of that of the general family, namely, on the order of 10 kW or 100 kW. However, as
5 shown in Fig. 1, it is also within the scope of the present invention that it is in principle possible that the operation can also be conducted in each terminal unit at the level of a shop of a tenant and/or at a level of each person living in the room.

10 Fig. 2 is an embodiment of the information disclosure and contracting method for the demander of distributed power supply businesses according to the present invention and shows a procedure (a flow to contract a power utilization plan) showing flows of
15 representative information items to sign a contract to set a load pattern between the enterprise and a demander.

Assume that the enterprise is equipped with infrastructure to conduct, between the enterprise and
20 the demanders, communications of respective data via a communication line of a telephone company, a communication line possessed by an electric power company, or the like. The infrastructure includes personal computers of the demanders and data processing
25 terminal tools, which will be described later.

Assuming that the demanders has already signed a basic power utilization contract with the enterprise, description will now be given of a process to determine

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a mode or pattern to purchase or to utilize electric power.

First, the demander activates the information apparatus to establish a communication line to conduct
5 bidirectional data communication. Assume that the demander prepares a support system which displays a screen indicating a procedure to communicate information necessary for the mutual contract so as to comprehensively summarize the entire operation from the
10 start to the end of operation on the demander side. This is a requirement to construct a user-friendly system operable regardless of proficiency of the demander for electronic apparatus operation.

<1> After the procedure is confirmed, the demander
15 displays a menu presented by the enterprise at the point of time. "At the point of time" implies that there exists a chance that the unit power price is changed in the time difference or in the difference of period from the contracted point of time to the
20 contract period (start point). This is conducted for the following reason. When the enterprise considers that the generating power is to be determined at an early point of time for the operation plan of power generating facilities, there exists a background of
25 management statistics to increase demand for electric power of the demanders by providing a relatively low unit price of power. In a situation in which the contract period (start point) is at hand, this is an

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inevitable action to minimize adjustment margin on the enterprise side.

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<2> By the display of the menu, it is possible for the demander to examine a desired pattern. Basic items to be displayed on the menu include a unit power price according to electric power (current) for each contract period. For example, for two months of July and August, it is assumed that there exists high demand, and hence there is displayed information in which an extra charge rate is set to a high value particularly for time zones in the daytime. To cope with a life pattern and a utilization pattern of the demander, there is conducted guidance which enables the demander to select a mode by combining a daily contract period with a weekly contract period. Additionally, at the same time, information items of the charge and the unit price of the respective periods are also displayed. Having generally recognized the basic information above, the demander sets a pattern of desired power consumption to a desired period. In this specification, the pattern is called "customized pattern". By using the unit price information calculated according to the menu described above, the charge value can be calculated on the demander side, and the demander sends information of the customized pattern to the enterprise side.

<3> As a method to prevent any trouble, it is in this case preferable to use a charge value presented from

the enterprise side. Although the charge value may be presented by software installed in the information apparatus, the software must be updated each time the unit price is changed by the enterprise side. Since the demander can obtain the unit price information displayed in the menu and the charge value in the customized pattern, judgement can be conducted according to contents and constitution of the charge value. In a case in which the demander considers that the present charge value is high, the demander can understand which one of the components is to be minimized to efficiently reduce the total charge value.

<4> The minimum level of intentions on the demander side can be determined in this stage. In the embodiment, furthermore, it is possible to collate actual results of a predetermined period in the past. Changes in the trend of power consumption in management categories such as an individual, a family, a building, and the like are important judging elements for persons in charge of expenditure respectively for the individual, the family, the building, etc. Excepting a large-sized power company, this does not come to the surface in the charging system and the charging method of the prior art and is a potential demand for demanders of the small-power distributed power supply. Therefore, in the embodiment, it is possible to clearly presents the potential information need to the demanders. That is, since a demander who has just

5 However, for a demander having accumulated data for a predetermined period of time, since information of actual consumption of each demander can be stored as electronic information, it is possible to present also results of charge values in the past to the demander.

15 Description will be given of a case in which
an unmarried demander sets data in the operation
according to a pattern of actual load in an associated
period of the last year and the charge value of the
period. Assume that the demander is working in a firm
20 and the contents of his job are changed due to
influence of the reformation of the organization in the
firm. His daily life pattern is also changed and he
must go to the office early in the morning at present.
When the time zone for housework such as preparation
25 for breakfast in the independent life becomes two hours
earlier than before, the pattern of power consumption
of each week day is changed such that the two-hour
shift takes place in the morning pattern. As a result,

the power consumed is the power belonging to a low price zone to which the early morning and night charge is applied. Moreover, there also occurs influence upon the sleeping time, and hence the load pattern is also

5 influenced upon the time zone. If the demander examines the data of actual results of the last year and desires to reduce the living cost for a less expensive life, the demander will go to bed early in the night and will get up early in the morning.

10 Moreover, the demander can set the power consumption and the target of charge value to lower values in an available range. Therefore, it is possible for the demander to compare economic effect between the life pattern in the past and that at present, and hence the
15 demander can set a basic target to control his life.

<5> Furthermore, for the changed pattern thus set, the power consumption is not completely traced. In actual results, the value at each point of the pattern has deviation, namely, for a higher value and a lower
20 value. When the actual results are higher in this situation, the shift from the expected pattern is achieved in a direction to minimize the available capacity of the facilities of the enterprise.

Consequently, when the upper limit of the contracted
25 pattern is exceeded, an extra charge is introduced and the unit price becomes also higher than that of the contracted power.

<6> Therefore, information of the extra charge of the

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unit price associated with the deviation from the pattern in actual results is also important information for the demander. Consequently, the demander modifies the items of the time zones and periods in which the unit price difference is large to create a modified pattern and sends the modified pattern to the enterprise. In response to the modified pattern, the enterprise uses the load pattern set by the demander as the basic data. The enterprise can attract attention of the viewer as follows. Data of extra charges due to the deviation from the pattern is displayed on a setting line associated with a largest value of extra charge or in the vicinity of the setting line. Moreover, data items are displayed in various colors or lines are drawn with various widths, or the like.

<7> Charge information based on the re-changed pattern modified by the information of unit price difference is then presented to the demander. Furthermore, in addition to the presentation of the information of unit price difference, charge value information calculated on assumption that the charge value is calculated according to a direct contract between the demander and the existing power company or information of difference amount regarding the amount difference with respect to the charge value of the existing power company in this case is returned to the demander. As a result of the operation, the economic advantage of the demander is clearly displayed as an amount, and when the value is

greater, the development or introduction of distributed power supply is strongly promoted.

<8> In this step, the contract is finally set, and a period of time to settle the bank account is selected
5 and is set, or use of a prepaid system or the total settlement is set.

In the embodiment, it is possible to confirm a load pattern, charge value information, and information of change in unit prices associated with
10 difference between actual values and expected values which are determined according to the flow. Therefore, this is favorable for the interest of the demander as well as for the gathering of demanders of the enterprise and the creation of a load operation plan of
15 power generating facilities of the enterprise, and hence yields profit for the demanders and the enterprise.

Fig. 3 shows a flow to set data and a flow to create reference actual values in the embodiment. In
20 the flow, on assumption that actual results data is insufficient on the member side, a data sample beforehand possessed by the enterprise is presented, to the demander, as standard data (a standard pattern), for example, a mean value, a central value, or the
25 like. Thereafter, the demander requests to collect own data of the pertinent month (period) according to intentions of the demander, and requests presentation of actual result data after completion of the contract

FIG. 3

Fig. 4 shows data communication lines between the enterprise and demanders and a data communication tool in the embodiment. Telephone lines and the like are used as information communication lines between the enterprise and a plurality of demanders, and as an example of communication tools on the demander side, a personal computer (PC) and a tool dedicated for reception and transmission are connected to the system. In this connection, the communication system may be configured such that a homepage of the internet is opened and a bidirectional information link is established therein.

Fig. 5 shows a tool as a dedicated information terminal of the embodiment. Fig. 5(a) shows an appearance of the tool and a display section and a setting section thereof. In this diagram, only the setting of a load pattern is shown, and display of a charge value is not shown. Example A is a load pattern in a case in which the load pattern is drawn for respective time zones of a day. The load pattern is associated with a condition that the demander is present or absent in the house and that the electric upper-limit capacity of the power distribution facility associated with the power consumption facilities is restricted, and hence a line thereof is shown. In general, it is assumed that the facilities for the

family distributing system used in the contract with an existing power company are also used in this system.

Therefore, the setting must be conducted in consideration of the upper-limit capacity of the 30A

5 contract which will not cause a fire. Any setting of a value exceeding this value is assumed as invalid. This is an essential requirement. Example B shows a setting section in which operations corresponding to items regarding the contents of the display section are

10 conducted. This section is used to conduct operation to set a target period to be set, operation to set a load power for each period partition, operation to display charge values for a defined load pattern, operation to display values of actual results, and any
15 associated operations. Fig. 5(b) is a diagram of an image showing the display section and the setting section.

Referring to Fig. 6, description will be given of a point of time at which the load pattern is
20 determined (fixed) in the embodiment. In the determination of an expected load pattern, it is necessary to determine (fixe) a load pattern before a start point of time of use of the expected pattern.

In Fig. 6, the present point of time exists
25 in a period A, and it is desired to set a period B. Assume that a latest determination point for the setting of the period B is represented as Tend (pattern determination end limit). The point of time is set by

FIG. 5(b) "CHARGE"

5 automatically conducted in the same way as for the
previous setting. In some cases, it is assumed that a
procedure of a subsequent stage is prepared in advance
such that the successive fixed load at the upper-limit
capacity of the facilities is automatically set. To
0 achieve rationalization by setting the pattern is the
inherent object of the present invention. If the
setting action cannot be achieved for some reasons, the
substitution procedure must be conducted as described
above.

On the other hand, the power company of distributed power supply desires to develop business by completely using the capacity of the facilities thereof. Therefore, excepting the maintenance period, the profit is in general higher, when the facility operating rate (the load rate of power generating facilities) is higher. Under this condition, while the pattern setting are increasingly executed for many power demanders, if it is determined at a point of time near the contract determination limit that the assumed or expected load rate is not realized, it is possible during the remaining period to set a spot price to a reduced value. This is conducted to increase the facility operation rate. General demanders can wait

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Fig. 8 shows a total load pattern of a combination of a determined load pattern and a spot supply viewed from demanders.

10 total load pattern.

15 not intended to contract the load pattern in advance.
Moreover, there may exists a case in which the demander cannot conduct the pattern setting because the demander is quite busy or is absent from the pertinent location although the demander is willing to sign the contract.

20 In this case, the upper limit (corresponding to a
relationship between an existing power company and each
demander) of the capacity of power distribution
facilities of the demander is automatically selected.
Alternatively, by using, as assumption, the actual load
25 pattern of the associated period of the previous year
(or the previous month), there is produce a power
consumption estimation which is considered to be most
reliable. According to the power consumption

estimation, the charge setting operation is conducted. In this situation, a demander authenticating action is required. This corresponds to an action in which the pattern in the past described above is confirmed on the display screen and then a similar setting is conducted as a new setting for the charge.

Referring to Fig. 10, description will be given of the contents of the processing on the enterprise side. Each demander sets a demand pattern according to intention of the demander, recognizes a charge value assuming actual results of consumption according to the pattern, and returns the contents of the pattern thus set to the enterprise to thereby sign a contract. The data itself used in this operation sent from each demander is accumulated as accumulated value data on the enterprise side. The enterprise can display the accumulated data together with the spot demand as a curve changing with respect to time, and it is possible to confirm margin viewed from scheduled total power generation capacity. In Fig. 10, a summary or total of information returned from demanders shows summary of accumulated information at this point of time and that of the last month, including subordinate information to forecast changes thereof up to a final determination point of time. This is provided for the following reasons. The enterprise side can flexibly develop businesses by paying attention to the setting change made by each demander as a customer according to

uncertain environmental variations such as the weather and to accidental and overall trends of arbitrary operation for a point of time to determine the contract contents.

5 Fig. 11 shows a charge settlement method associated with a charge paying method. As shown in Fig. 11, (1) assuming electronic processing of planned power utilization and charge value thereof, it is possible to introduce a prepaid method. Additionally,
10 (2) it is natural that the payment after determined results can be used as in the prior art (piecework system).

 In the prepaid method, for a demander having surplus money, discount of the interest on the prepaid
15 amount may be allowed, or this method may be treated as "item" in a step of a strategic approach for the enterprise to gather demanders. Incidentally, when the prepaid amount is less than the amount of power actually used, the rest of the amount is to be settled
20 later. However, such an amount is only a difference from an initially forecast amount and hence it does not lead to a temporary heavy load on the demander. That is, this method can be regarded as rational.

 Furthermore, referring to Fig. 11,
25 description will be given of (3) a comprehensive (combination) settlement method. This is applied to a variation of a complex mode including a case in which a relationship between the power company using

distributed power supply and the power demander is applied not only to a business limited to the fundamental utility "electric power". That is, there exist also a case in which the enterprise also has a second company of another kind and a case in which the power company using distributed power supply stands on the customer side for second company described above. For example, when the power company using distributed power supply has a daily necessities retail store by mail, the company is a customer of the store. For the relationship between the enterprise and the customer (demander), there exist two kinds of paths. In this situation, only if the settlement method is in detail determined, there does not occur any essential problem in the comprehensive settlement. It can be rather considered that the commercial transaction like the mail-order sales is a more rational mode of business for the life because transmission and confirmation of intention of purchase can be achieved via electronic media in the present social situations. Moreover, in the relationship between the power company using distributed power supply and a demander who is a real estate enterprise, when the enterprise as a demander of the real estate agent lends an office therefrom, there also exist two kinds of paths therebetween. In this case, a relationship of supply and demand mutually exists therebetween, the settlement can be achieved in the comprehensive settlement. The comprehensive

settlement method can be easily implemented without any intervention of the banks ordinarily used only if the management of details and the settlement periods are clearly determined by the contract signed by both parties concerned.

Next, referring to Fig. 12, description will be given of collection of load demands from a plurality of demanders of the power company using distributed power supply. Assume that demanders range from customer 1 to customer N and are represented as C.1 to CN, respectively. The abscissa represents periods (time) and the ordinate represent the power resultant from the collection of load patterns of each customer. Assume that the total thereof is expressed as $\Sigma C.n$. As a result, the total (in the management units) of demander load patterns of the enterprise is known as above. The value can be used as fundamental data for the enterprise to create a facility operation plan, a facility maintenance plan, a standby generating facility preparation plan, a plan to set a power generation quantity and a unit price for the spot supply, and the like. The total value can also be employed as an index essential for important operations and management of the enterprise.

25 Description will now be given of significance
of the fundamental data used to set a power generation
quantity and a unit price for the spot supply by
referring to Fig. 13.

A graph in a lower section of Fig. 13 shows a spot charge setting example. Basically, using a Kw unit price coefficient M as a reference value, a higher unit price is set to a period of a higher demand and a lower unit price is set to a period of a lower demand. Under this condition, according to experiences, know-how, and the like of the enterprise, the unit price is strategically set.

A table in a lowest section of Fig. 13 is a spot charge setting table. In the table, "first phase" is used such that the spot charge can be variably set

according to a period difference of the period of time up to the actual operation time. In Fig. 14, "second phase" is provided such that by recognizing a degree of change in data of supply capacity margin at a region setting point, the charge is set in association with a trend of the change. The final purpose is to finally set the unnecessary standby capacity to zero.

As above, in the embodiment, the system can cope with difficulties by controlling the charge.

10 Therefore, it is possible to lead to optimization in
association with the contract and the management and
the family budget respectively on the enterprise side
and the demander side.

Subsequently, description will be given of
15 part of hardware as an apparatus necessary to create a
power utilization actual result pattern of each
demander. The hardware is an apparatus necessary to
examine a power utilization actual result pattern as
history data in the past which each demander using the
20 personal computer and the dedicated tool described
above refers to when the demander sets own data as well
as to examine part of the fundamental data necessary
when the enterprise checks actual results of execution
of contracts of demanders for the following reasons.
25 The watthourmeter (to measure watt time integral value)
installed heretofore for each family cannot obtain watt
pattern data depending on cases and/or the facilities
possessed by the existing power company in the form of

The hardware as the apparatus is implemented in either one of the following methods. That is, hardware corresponding to the meter is installed; the existing meter is partly modified, or the measured value of the existing meter is read in a physically contactless way. In this connection, Fig. 15 shows an example in which the measured value of the existing meter is read in an optical, contactless way.

In the description, "the measured value of the existing meter is read in an optical, contactless

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way" indicates that the contents displayed by the meter is obtained by use of reflection of a mirror surface or by directly shooting the meter by a camera. Video information thus obtained is used to recognize a pattern according to a change in the numeric value or the number of rotations, and a value resultant from the pattern recognition is differentiated to recognize the information as a value of power.

Additionally, for the usability of the operator or the user, there can be considered a case in which a load pattern is discussed after the budget is determined. Therefore, when an initial load pattern set by a demander cannot be implemented within the budget, it is necessary to obtain a reference for the operation for modification. For this purpose, the period and power point associated with the budget can be marked. Using information thus marked, the demander can easily modify the own setting in a minimizing direction.

Next, electric power belongs to fundamental utilities indispensable for public interest, and hence if a trade of the charge is possible with the charge of other public utilities, the system will become rational. For example, assume that in the same energy type, the public utility of (urban) gas takes a similar contract mode as for the electric power and a particular demander pays the charge value to a particular company. When an excess portion of power is

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treated as a charge value of the gas charge associated therewith, there advantageously arises flexibility in the payment by the demander.

As described above, according to the present invention, it is possible to conduct operation with a possibly highest capacity of the power generating facilities, which has been impossible in the almost fixed charge system between the power supply and the power demand of the prior art. It is therefore possible to implement a flexible and rational power consumption mode. Additionally, the optimization effort of the demander side to minimize his or her expenses in the process of the operation can be reflected in the minimization of expenditures. This therefore contributes to the strengthening of independence of the own life pattern, and minimization of waste is also related to suppression of adverse influences upon an environment necessary for power plants. There can resultantly be created a good situation viewed from a social viewpoint.

Furthermore, the present invention contributes to the minimization of the capital investment for facilities in the existing power companies and to an advantage that the relation between supply and demand can be determined with high precision between the enterprise using distributed power supply and the general power demanders. This is advantageous for the creation of the business project, that is, the

margin of the standby capacity of power generating facilities can be reduced. Moreover, the feat of minimization of the capacity margin in the highest power consumption period every year can be removed, and
5 reliability of wide-range power business operation can be improved.

Moreover, at the same time, since the power generating facilities have highest efficiency at a rated point in ordinary cases, chances of undesired
10 prohibition of activation of the facility and operation with a lowered load are minimized. This therefore leads to an advantage of improvement of the overall operation efficiency in a wide range. In addition, this also leads to an advantage, in consideration of
15 activities against the environment problem which are required for the existing power companies and which also belongs to social missions, to reduce the total volume of harmful substances emitted in the atmosphere on the surface of the earth and also possibly leads to
20 reduction of the electric charge.

Additionally, electric power belongs to utilities indispensable for public interest, and hence if a trade of the charge is possible with the charge of other public utilities, a particular demander can pay
25 the charge value to a particular company, which advantageously leads to flexibility in the payment by the demander.

While the present invention has been

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described in detail and pictorially in the accompanying drawings, it is not limited to such details since many changes and modifications recognizable to those of ordinary skill in the art may be made to the invention
5 without departing from the spirit and scope thereof.

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